UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

MEMORANDUM

DATE: DEC 0 4 2004

SUBJECT: ENFORCEMENT ACTION MEMORANDUM - Request for a Time-Critical Removal Action at the St. Louis Smelting and Refining Company Site, Collinsville, St. Clair County, Illinois (Site ID # B54N)

FROM: Kevin R. Turner, On-Scene Coordinator Signed for K.T.
Emergency Response Section 2

TO: Richard Karl, Director
Superfund Division

THRU: Tom Geishecker, Acting Chief
Emergency Response Branch,
Superfund Division

I. PURPOSE

The purpose of this memorandum is to document the need to conduct a time-critical removal action to mitigate an imminent and substantial threat to the public health and the environment posed by the presence of hazardous waste and hazardous substances located at the former St. Louis Smelting and Refining Company Site (St. Louis Smelting) , Collinsville, Illinois (Latitude - 38°41'28" North and Longitude - 89°57'35" West) . The former St. Louis Smelting Site operated as a primary lead smelter and lead refining facility, but now is occupied with residential homes and two surface water bodies.

The response action proposed herein will mitigate Site conditions by removal and off-site disposal of the contaminated soil and slag. The high levels of lead in surface soils at concentrations considered hazardous and the Site's proximity to residential properties requires that this action be classified as a time-critical removal.

There are no nationally significant or precedent setting issues associated with the former St. Louis Smelting and Refining Company Site. The former St. Louis Smelting and Refining Company Site is not on the National Priorities List (NPL).

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID# ILD980607006

A. Site Description

1. Site history

The St. Louis Smelting and Refining Company operated a lead smelting facility in Madison County, Illinois from 1904 until November 1933. At peak production, the facility employed 425 men. At the time of operation, the facility was located northeast of Collinsville, Illinois. Since that time, Collinsville has expanded to the area surrounding the facility and as indicated by historical aerial photographs, in the 1950s and 1960s residential homes began to be built on the property. The plant closed in November 1933, following a strike for higher wages and shorter hours. Following plant closure, equipment from the facility was shipped to South America . The actual date when the facility was dismantled is unknown, however, aerial photographs from 1941 indicate that only two buildings remained intact. The aerial photographs show primarily foundations, rubble, a general lack of vegetation and a large slag pile where the unnamed pond at the end of Pine Lake Road is now located.

A plat map of Madison County from 1917 indicated that at one time, St. Louis Smelting owned up to 482 acres, however, it is generally believed that refining activities occurred on approximately 40 acres. Through various data collection activities, it is now believed that the area affected with elevated levels of lead may total approximately 148 acres. Residential development in the area directly north and south of Pine Lake began in the 1950's as evidenced by historical aerial photographs. Residential development to the east of Pine Lake in what is now called Collinswood subdivision began in the mid-to-late 1970s. Residential development in the area has progressed in phases and building currently continues on the last empty lots.

2. Physical location

The site is located east of Route 159 with Pine Lake Road as one of its central features. The site extends to the west to include Pine Lake and to the east to include the unnamed pond at the end of Pine Lake Road. Roads most nearly bordering the site on the north and south are Peachtree Trail and California Avenue, respectively (see Attachment C). Property use within site boundaries is single family residential. Residential property lot sizes are less than one acre with a few exceptions. Homes in the area range from approximately 90 years old to less than 1 year in age. Homes in the area receive potable water through a public water supply system. Topography within the central portion of the site is relatively flat changing to rolling hills on the northern, southern, and eastern portions of the site.

Two surface water bodies exist on site, Pine Lake and the unnamed pond on the eastern end of Pine Lake Road. Surface water runoff from residential properties adjacent to Pine Lake is channeled into the lake. The south shore of Pine Lake is dammed and bounded by Pine Lake Road. The dam has a culvert that allows water in Pine Lake to drain under the road during high-water periods. After flowing

under Pine Lake Road, drainage from Pine Lake flows south-southwest into the lakes in Woodland Park. Residents of the Pine Lake Subdivision surrounding Pine Lake own the water body and small portions of adjacent property. Pine Lake and unnamed pond are used for recreational fishing throughout the year and swimming during warmer months.

According to the Region 5 Superfund Environmental Justice Analysis, the group of residents closest to the Site reside in census tract #4035.02, block group #3. This block group has a total population of 2,501. Of the 2,501, 91.7% are classified as non-minority. Approximately 89% of the families residing in this block group have an income of greater than the established State low income level. The demographic conditions indicate that this is not an environmental justice area.

3. Removal Site Evaluation

This site was first sampled by Illinois EPA in 1985. Since that time several investigations have occurred with the most recent in 2002 and 2003. Below is an abbreviated version of the Illinois EPA data and is divided according to calendar year. The complete Illinois EPA data can be found in the Administrative Record.

1985

In July 1985 Illinois EPA and Illinois Department of Public Health (IDPH) collected a slag sample and 9 soil samples from two residential yards in the Collinswood Subdivision. Laboratory analysis of the lead slag showed 13,000 mg/kg, or parts per million (ppm) lead. Lead concentrations in the soils collected from the two properties ranged from 12 mg/kg to 2,600 mg/kg. In October 1985, Illinois EPA obtained one slag and one soil sample from the area of highest concentration. The samples were analyzed for distilled water leachability and EP Toxicity. The leachability test on the slag and soil resulted in 760 ppm and 53 ppm, respectively. The EP Toxicity test on the slag and soil resulted in 1.7 ppm and 40 ppm, respectively.

In October 1985 IDPH collected 51 additional soil samples from 26 residential properties. Concentrations of lead in the soil samples obtained by IDPH ranged from 31 mg/kg to 7944 mg/kg.

1986

In September 1986 Illinois EPA personnel obtained additional samples from the site. The sampling activities focused on the unnamed pond at the eastern end of Pine Lake Road, and surrounding areas. Soil samples from three locations on the dike east of the pond were also composited. Lastly, slag and a slag/soil mixture was obtained from a residential property west of the pond.

The table below summarizes the results from the September 1986 sampling conducted by Illinois EPA.

September 1986 Sample Summary

Sample Location	Total Lead Concentration (PPM)
Slag	13200 - 14800

Residential Soil and Slag	2700
Dike Soil Composite	981

1991

In May 1991 Illinois EPA and IDPH obtained twenty-five samples from nine yards in the Collinswood subdivision. Each sample was analyzed for total lead and Toxicity Characteristic Leaching Procedure (TCLP) lead. Prior to analysis, samples were sieved to eliminate particles that would not pass through a #200 sieve (0.074 mm). This procedure was performed to remove large indigestible pieces of lead slag in an attempt to determine the amount of respirable lead in the soil. Total lead concentrations in soils ranged from 8.8 mg/kg to 4700 mg/kg. Results for TCLP lead analysis ranged from 0.003 mg/L to 20 mg/L.

2002 and 2003

In March 2002 additional field-based site characterization for on-site soils using a Niton X-Ray Fluorescence (XRF) multi-element analyzer were performed by the Illinois EPA. In addition, due to the high levels of lead encountered during previous assessment, several samples were sent to a laboratory for analysis.

Residential soil sampling activities were conducted at homes in the area surrounding the former location of the smelting facility. Soil samples were obtained with a clean stainless steel trowel and XRF analysis was performed at the sampling location immediately following collection. Soil analysis via XRF was conducted at the soil surface at each sampling location and in general, at approximately 6-inch intervals up to a depth of 2 feet. The final depth of soil sampling and analysis at each location varied depending on soil characteristics and XRF results. Concentrations of lead ranged from below detection to over 90,000 ppm. Thirteen of the first 31 properties tested had lead concentrations greater than 1000 ppm. Six soil samples were sent to a laboratory for analysis. Lead concentrations in these soil samples ranged from 389 mg/kg to 36,700 mg/kg.

III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the St. Louis Smelting and Refining Site present an imminent and substantial threat to the public health, or welfare, and the environment and meet the criteria for a removal action provided for in the National Contingency Plan (NCP), Section 300.415, Paragraph (b)(2). 40 C.F.R. § 300.415(b)(2)(I), (iii) and (v), respectively, specifically allows removal actions for:

1) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

The Site is located on the former St. Louis Smelting and Refining Company property. Illinois EPA has documented the presence of lead in residential yards above health standards. The health concerns at

this Site are related to the fact that residents live in and amongst the former lead slag piles, potentially exposing young children, pregnant women and elderly individuals to contamination.

The effects of lead exposure are more severe for young children and the developing fetus through exposure to a pregnant woman. The harmful effects of lead include premature births, lower birth weight, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. In adults, lead increases blood pressure, induces anemia as a result of the inhibition of hemoglobin synthesis, decreases reaction time, affects memory, and damages the male reproductive system. Lead is also considered by U.S. EPA to be a class B2 or probable human carcinogen. Toxicity information is summarized in the references, ATSDR, 1993 and U.S. EPA, 2000.

The highest concentration of lead was over 90,000 ppm at one residential location. In addition, the Illinois Department of Public Health recommends that remediation efforts be initiated on the basis of the high levels of lead found in the surface soils and based upon the likelihood of sensitive populations (i.e. children and pregnant woman) being exposed to lead. Since the neurological effects on young children and the developing are considered to be irreversible, even short term exposures to elevated lead levels are of a public health concern.

References:

ATSDR. 1993. Toxicological Profile for Lead. Agency for Toxic Substances and Disease Registry, Division of Toxicology. Atlanta, GA. U.S. Department of Health and Human Services, Public Health Service.

U.S. EPA. 2000. Integrated Risk Information System (IRIS). Database information located at http://www.epa.gov/iris/subst/index.htm.l; U.S. Environmental Protection Agency.

2) Hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate or pose a threat of release;

The elevated concentrations of lead (over 90,000 ppm) in the soils at or near the surface pose a threat of further migration of contaminated materials due to rain or melting snow. There is also the possibility of airborne migration of lead attached to dust particles. People and animals contacting contaminated areas could track lead to other areas on-site, off-site or into their homes. Children play areas and gardens are other areas where exposed contaminated surface soils are likely to come in contact or migrate with sensitive populations.

The Illinois EPA XRF and analytical data documented total lead levels to be consistently greater than 5000 ppm and greater than 1200 ppm at a depth of six to twelve inches in several residential locations.

3) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released:

During several site visits in 2002 and 2003, the On-Scene Coordinator (OSC) observed several areas where cinders are at the surface. Illinois EPA has documented that the surface soils contain lead, arsenic, and chromium in residential yards above health standards. Due to the slightly rolling

topography, heavy rains may cause migration of contaminants into the city sewer system. Winds could cause dust particles containing lead and other contaminants to migrate into the surrounding community. These weather conditions could result in a continued release of the contaminants of concern described herein to the surrounding residential neighborhood.

4) The availability of other appropriate federal or state response mechanisms to respond to the release.

In a letter dated April 22, 2002, Illinois EPA requested U.S. EPA, Region V assistance with the St. Louis Smelting and Refining Site. The City of Collinsville and an Illinois State Senator has also indicated their desire to see this site cleanup completed. Neither the State of Illinois nor the City of Collinsville has the funds to undertake removal of the hazardous wastes found at this site.

IV. ENDANGERMENT DETERMINATION

Given the conditions at the St. Louis Smelting and Refining Site, the nature of the hazardous substances on Site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Action Memorandum, present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS

A. Proposed Actions

The purpose of this removal action is to mitigate the imminent and substantial threats posed to public health or welfare or the environment from wastes at the site. The proposed immediate response action to be implemented by NL Industries, Inc. includes the following actions:

1) Develop and implement a Site Health and Safety Plan, including an air monitoring plan and Site contingency plan;

2) Develop and implement a Site security plan;

3) Develop and implement a storm water runoff control plan and a fugitive dust control plan.

4) Confirm and characterize extent of lead contaminated soil above the 600 ppm clean-up level at all residential locations associated with the site;

5) Characterize, remove and properly dispose of hazardous substance and wastes (contaminated soils) located at the Site in accordance with U.S. EPA's Off-Site Rule (40 CFR 300.440). For the purposes of this Action Memorandum, removal of contaminated soils are defined as those residential properties where soils exceed 600 ppm average lead concentration, to a maximum

depth of 15 inches;

6) Backfill the excavated areas with clean material and topsoil (where necessary) or otherwise stabilize exposed soils. Restore and vegetate to prevent soil erosion back to pre-removal conditions;

7) If necessary, replace and reimburse personal effects, trees and shrubs, and residential structure components (including sidewalks, driveways, landscaping rock, etc) destroyed, damaged or disposed of during removal activities;

The OSC has initiated planning for provision of post-removal Site control consistent with the provisions of Section 300.41 5(I) of the NCP. The nature of this removal action, as well as the removal of lead contaminated soils down to 15 inches below ground surface at individual residential properties, will eliminate the need for any post removal Site control.

The response actions described in this memorandum directly address the actual or threatened release at the Site of a hazardous substance, or of a pollutant, or of a contaminant which may pose an imminent and substantial endangerment to public health or welfare or to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

B. Applicable or Relevant and Appropriate Requirements

All applicable, relevant, and appropriate requirements (ARARs) will be complied with to the extent practicable. On May 26, 2004, a letter was sent to Bruce Everetts of the Illinois EPA requesting that the Illinois EPA identify State ARARs. Any State or federal ARARs identified in a timely manner for this removal action will be complied with to the extent practicable.

C. Project Schedule

This removal action is expected to take place in phases. Due to the size of this removal action, the project will take more than one construction season to complete.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Continued risk to public health and the environment will result if no action or delayed action ensues.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in an Enforcement Confidential Addendum (see Attachment A).

IX. RECOMMENDATION

This decision document represents the selected removal action for the St. Louis Smelting and Refining Site, Madison County, Collinsville, Illinois, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the Administrative Record for the Site (see Attachment B). Conditions at the Site meet the criteria of the NCP, 40 C.F.R. § 300.415 (b)(2) for a removal action, and I recommend your approval of the proposed removal action. You may indicate your decision by signing below:

APPROVE: Richard Karl DATE: 12-9-04
Richard Karl, Director Superfund Division

DISAPPROVE: _____ DATE: _____
Richard Karl, Director Superfund Division

Attachments:

A. Enforcement Confidential Addendum
B. Administrative Record Index
C. Site Area Map
D. EJ Analysis

cc: D. Stalcup, U.S. EPA HQ, 5202G
M. Chezik, U.S. Department of Interior, **w/o Enf. Addendum**
B. Everetts, IL EPA, **w/o Enf. Addendum**
R. Cipriano, IL EPA, **w/o Enf. Addendum**
S. Davis, IL DNR, **w/o Enf. Addendum**

BCC PAGE

NOT RELEVANT TO THE SELECTION OF THE REMOVAL ACTION

(REDACTED 1 PAGE)

ATTACHMENT A

ENFORCEMENT ADDENDUM

ST. LOUIS SMELTING & REFINING COMPANY SITE
COLLINSVILLE, MADISON COUNTY, ILLINOIS
JUNE 2004

(REDACTED 1 PAGE)

ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY

ATTACHMENT B

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
ST. LOUIS SMELTING AND REFINING SITE
COLLINSVILLE, MADISON COUNTY, ILLINOIS

ORIGINAL
NOVEMBER 2, 2004

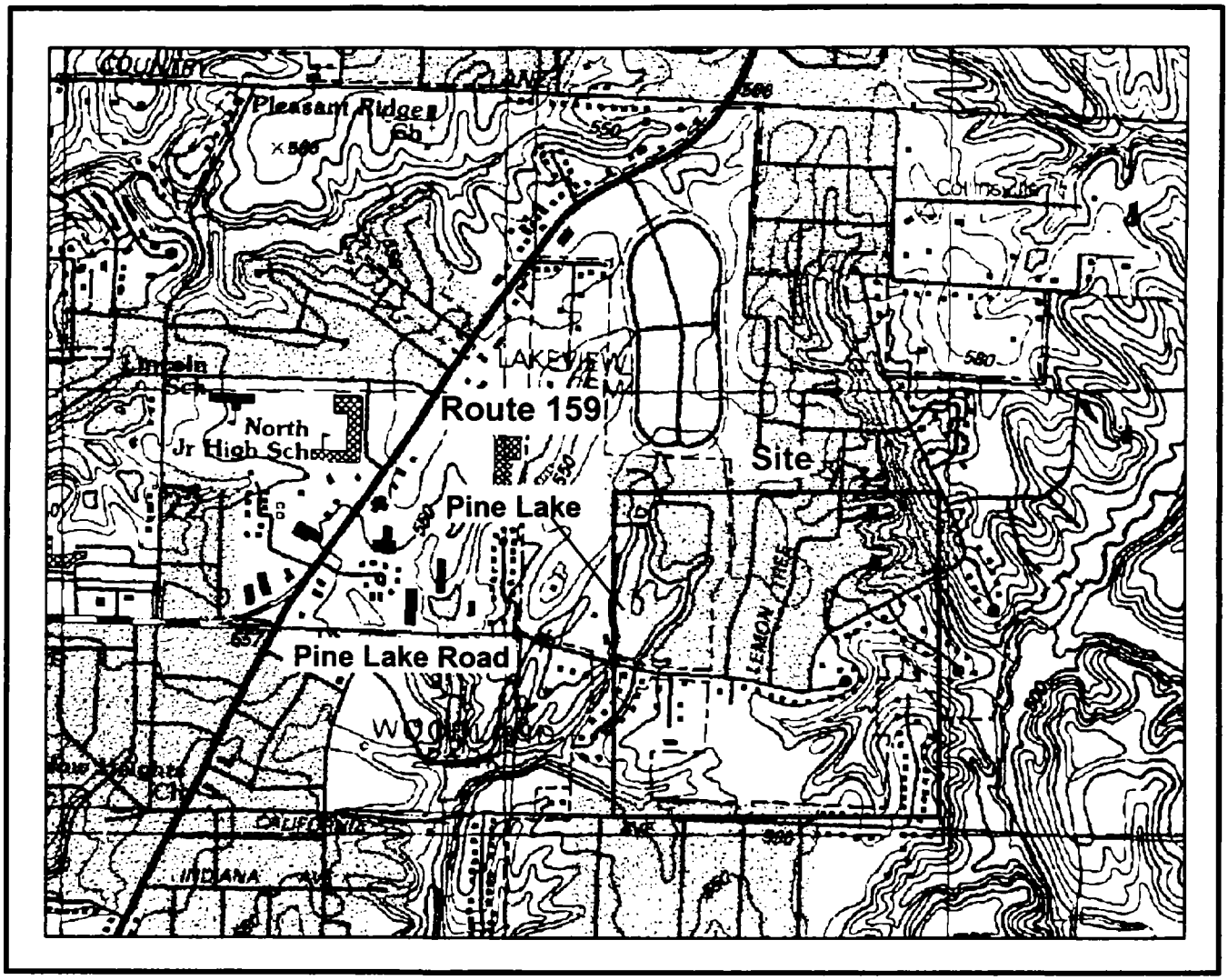
NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	00/00/00	U.S. EPA	File	Site Location Map for the St. Louis Smelting and Refining Company Site	1
2	06/08/81	Baser, F. NL Industries,	U.S. EPA	Letter re: NL Industries' Completion of Hazardous Waste Site Forms w/Attachment	3
3	06/28/02	Illinois EPA	U.S. EPA	Reassessment Report for the St. Louis Smelting and Refining Company	73
4	09/19/03	Illinois EPA	U.S. EPA	Expanded Site Inspection Report for the St. Louis Smelting and Refining Site	88
5	07/22/04	U.S. EPA	Respondents	Administrative Order on Consent for Removal Action at the St. Louis Smelting and Refining Site w/Attachments	401

UPDATE #1
NOVEMBER 12, 2004

1	00/00/00	Turner, K., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request for a Time Critical Removal Action at the St. Louis Smelting and Refining Company Site **(PENDING)**	

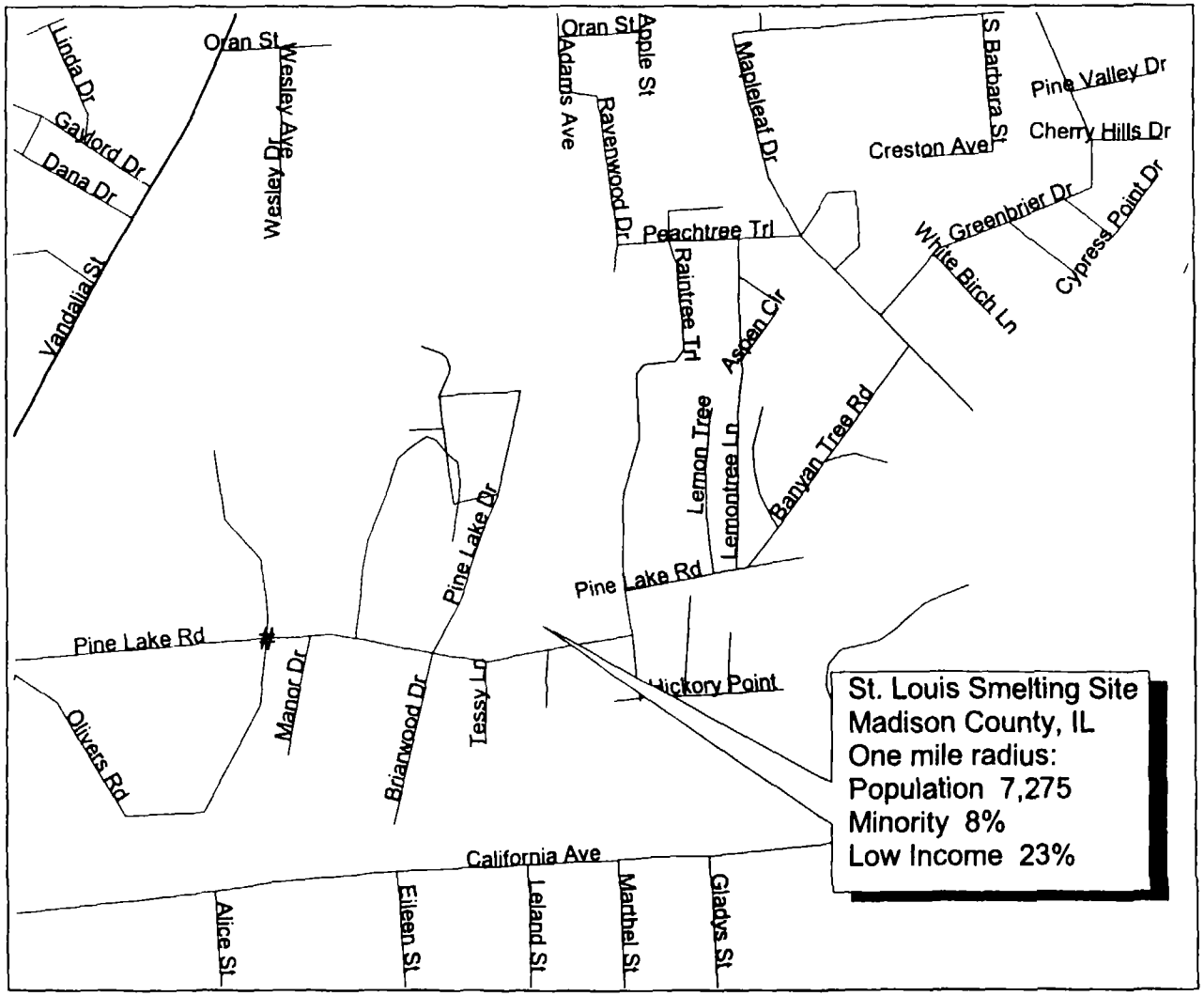
ATTACHMENT C

Site Location Map
St. Louis Smelting and Refining Company Site
Collinsville, Illinois



Region 5 Superfund EJ Analysis

St. Louis Smelting & Refining Co. Site Collinsville, IL



State of Illinois averages:
Minority: 32%
Low Income 27%

U.S. EPA Region 5
Environmental Justice Case Criteria
for State of Illinois

Minority: 64% or greater

Low Income: ~~58%~~ or greater

5/13 54 (27 x 2 = 54, ~~58~~)

Date of Map: 12/9/04

Source of Map: Census 2000 Database/ ArcView 3.0